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607.002

TO: Bloomfield Authorized Service Agencies
FROM: Tony Nixon, National Service Manager
SUBJECT: Troubleshooting 1016BVM

June 26, 2007

Model 1016BVM brewers utilize electronic control boards for timing and power switching functions. While it is tempting to immediately replace these electronic components in the case of equipment malfunction, they are, in fact, generally quite reliable and are seldom the root cause of the problem. Learning the unique characteristics of these controllers will help the service technician diagnose problems and return units to service more efficiently.

We have recently experienced a high number of warranty claims where the probe and both boards have been replaced. It is highly unlikely that all three parts would fail simultaneously. Tests of returned boards and probes show a very high percentage to be non-defective.

This brewer incorporates several features that render strictly intuitive troubleshooting ineffective:

- Unit is equipped with a high wattage heating element coupled with programmed action to insure rapid temperature recovery. The heater is energized near the start of a brew cycle and remains energized until the water inlet solenoid is de-energized. Water supply volume and pressure during the brew are critical. Insufficient water volume during a brew will allow the heater to boil available water, causing the unit to overheat. Symptoms include very little water dispensed during a brew, a general fault (all lights flashing) and/or tripped hi-limit safety.
- With traditional mechanical thermostats it is common procedure to adjust settings during a brew. This is not possible with this control board. Programming examines water temperature when it receives a brew signal, and brew cannot start until water is at the setpoint temperature. So that a brew is not interrupted by the influx of cold water, once a brew is initiated, programming does not look at tank temperature again until brew is completed. Neither setpoint, brew time nor dripout time may be adjusted during a brew.

Attached is a comprehensive troubleshooting guide for your use in diagnosing problems with this brewer. We fully expect that use of this guide will eliminate unnecessary replacement of good parts, as well as improving technician knowledge of, and comfort level with, this equipment.

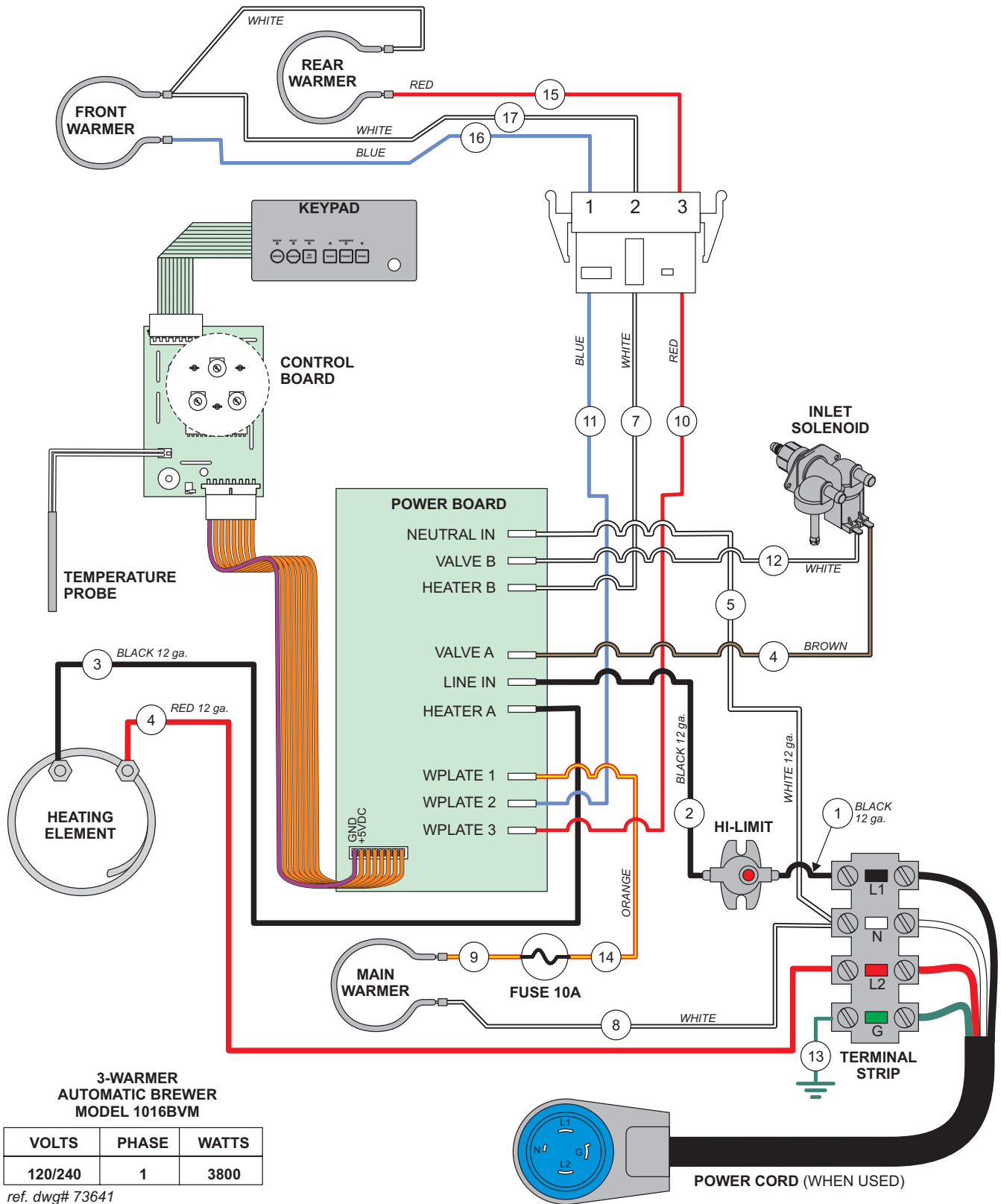
IMPORTANT SERVICE INFORMATION

Control boards, power boards and temperature probes submitted for warranty will be tested.

Any board found not to be defective will be returned to you.

Warranty costs, including labor and associated expenses, will NOT be credited for replacing non-defective items.

BLOOMFIELD 1016BVM WIRING DIAGRAM



Service Bulletin 107.002

BLOOMFIELD 1016BVM TROUBLESHOOTING GUIDE

SCOPE: This Troubleshooting Guide addresses potential problems peculiar to this specific brewer. Normal maintenance issues, such as wiring damage and lime/calcium build-up are not covered.

DESCRIPTION: Bloomfield model 1016BVM is a displacement-style decanter coffee brewer that incorporates electronic control of brew temperature and brew time

Electronic components include a membrane keypad with LED indicator lights; a circuit board that controls water temperature and brew time functions; and, a circuit board for power switching functions. Water temperature is sensed by a thermistor immersed in the hot water tank.

Electro-mechanical components include an electrically actuated water inlet solenoid, an electrical resistance water heater and three independently switched electrical resistance plate warmers.

Preliminary Inspection:

Be sure brewer is connected to a potable cold water supply line and water is turned on.

Be sure brewer is connected to appropriate electrical supply and circuit is turned on.

CHECK tank is filled

Press ON OFF key until all indicators are off.

Be sure brew chamber is installed, then place empty decanter under brew head.

Press BREW BREW BREW CANCEL. BREW and HEAT indicators will flash and tank will begin filling. When water begins to flow from brew head, press ON OFF key to terminate fill.

EXPECTED (NORMAL) OPERATION

Press ON OFF key. POWER and HEAT indicators should glow.

HEAT indicator will go out when water in tank is at setpoint temperature.

Press BREW key to initiate a brew.

NOTE: Brew will not begin until water temperature is up to setpoint.

BREW indicator glows until brew plus dripout is completed. Main warmer is energized automatically and LOWER warmer indicator glows. At end of brew, plus dripout, three beeps sound and BREW indicator goes out.

Press WARMER key to energize or de-energize a warmer plate. The associated WARMER indicator glows when energized.

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DIAGNOSTICS - FLASHING LIGHTS AND BEEPING ALERTS

All LEDs flashing: GENERAL FAULT

Possible causes are a shorted temperature probe, an over-temperature condition, or controller did not detect at least 2°F temperature rise within 4 minutes.

Press CANCEL for 6 seconds to reset after a general fault.

IMPORTANT: Be sure brewer has sufficient inlet water volume. Low volume will allow water in tank to boil, resulting in possible over-temperature shut-down. Allow unit to cool and complete tank fill procedure before attempting a reset.

TEST 1: Disconnect probe from control board and press CANCEL for 6 sec. to reset.

IF unit resets, probe is defective. Replace probe p/n 83644. Be sure to replace seal washer p/n 83731 at the same time.

IF unit does NOT reset, or returns to fault within 4 minutes, proceed to next test.

TEST 2: Connect a known good temperature probe to control board. Reset unit.

IF unit will not reset, replace control board p/n 83635.

IF HEAT LED lights, but unit returns to fault, proceed to next test.



CAUTION

The following procedure exposes live electric circuits.
Use due care when working around electricity.

TEST 3: Check for line voltage at heating element terminals.

IF voltage is present, replace heating element p/n 8716-1. Also, be sure to replace gaskets p/n 8043-30.

IF voltage is NOT present, proceed to next test.



CAUTION

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TEST 4: Be sure hi-limit thermostat is reset. Check for line voltage at power board terminals LINE IN and NEUTRAL IN.

IF voltage is present, replace power board p/n 83636.

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DIAGNOSTICS - FLASHING LIGHTS AND BEEPING ALERTS

TEST FOR NORMAL OPERATION ON INITIAL START-UP

When power is first applied to the brewer, all LEDs will come on momentarily and alert beeps four times.

The alert will beep once each time a key is pressed.

Press BREW BREW BREW CANCEL to initiate tank fill. BREW and HEAT LEDs flash continuously. Press ON OFF to terminate fill.

Press ON OFF to energize brewer. Alert beeps five times and POWER and HEAT LEDs on steady. HEAT LED goes off when water reaches setpoint temperature.

Pressing BREW key during a brew or before HEAT light goes out will cause BREW LED to flash. A second brew will not be initiated.

Press CANCEL at any time during a brew to de-energize the water inlet valve.

NO lights and NO sound:

Be sure brewer is plugged into an appropriate receptacle and circuit breaker for that circuit is turned on.

Check/reset hi-limit thermostat.

Check multi-wire cable from control board to power board. Cable must be properly connected to both boards.



CAUTION

The following procedure exposes live electric circuits.
Use due care when working around electricity.



Check for line voltage at power board terminals LINE IN and NEUTRAL IN. voltage is present and no lights/sound, replace power board p/n 83636.

NO lights, alert beeps on startup but no beep on keystroke:

Check ribbon cable from keypad to control board. Cable must be properly connected.



cable is properly connected, test keypad by connecting a new keypad to control board. Replace keypad p/n 83633 if found defective.

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BREW TIME & VOLUME

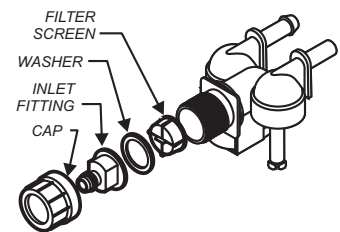
PROBLEM 1 - TOO LITTLE BREW VOLUME (SHORT POT)

Remove 2" silver hole plug from brewer body.
Water solenoid open time is controlled by upper dial on control board. Be sure pointer on dial is set to desired time in seconds.

NOTE: Time cannot be adjusted during a brew cycle.

Brewer must be installed on a water line with average pressure of at least 20 PSI. Be sure water supply is connected to brewer, and that water supply valve is fully open. Be sure any in-line filters are clean and functioning properly.

Shut off water supply to unit. Remove solenoid cap and clean filter screen. Be sure to reinstall screen properly. Reinstall cap and turn on water supply.



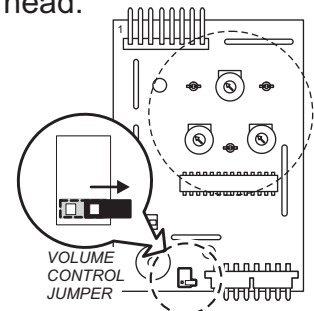
Using a reliable stopwatch, measure actual brew time against time on dial. Set dripout time (lower right dial on controller) to minimum. Press BREW key. BREW indicator will glow and relay on power board will click. At end of brew cycle, three beeps sound and BREW indicator goes out.

- IF** brew time is acceptable, check water path for obstructions. Silicone hose from inlet valve may be removed from tank fitting and directed to an empty decanter to verify volume. NOTE: once tank is filled, any volume of water entering tank will displace a like volume of water through the brew head.

Examine jumper at bottom of control board. If jumper is across both pins, remove jumper and reinstall on right pin only. This sets timing range to 120 - 250 seconds.

- IF** brew time cannot be adjusted, or timing is outside of useable range, replace control board p/n 83635.

- IF** volume remains too low even though brew timer may be adjusted and no blockages can be found, replace water inlet solenoid p/n 85752.



BLOOMFIELD 1016BVM TROUBLESHOOTING GUIDE

BREW TIME & VOLUME (continued)

PROBLEM 2 - TOO MUCH BREW VOLUME OR BREWS CONTINUOUSLY

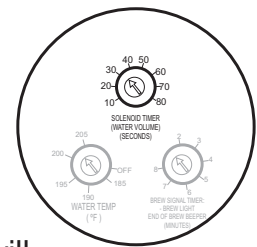
Tank temperature must not exceed local boiling temperature. Set no higher than local boiling temperature (based on altitude) minus 5°F.

IF water is boiling in tank, Remove 2" silver hole plug from brewer body lower water temp setting.

Brewer must be installed on a water line with pressure of no more than 90 PSI.

IF If water pressure exceeds 90 PSI at anytime, a pressure regulator must be installed in water supply line to limit pressure to less than 90 PSI.

Remove 2" silver hole plug from brewer body. Inlet solenoid open time is controlled by upper dial on control board. Be sure pointer on dial is set to desired time in seconds.



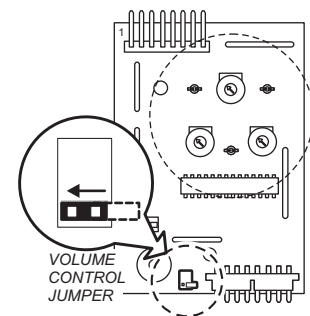
Using a reliable stopwatch, measure actual brew time and compare to time on dial. Set dripout time (lower right dial on controller) to minimum. Press BREW key. BREW indicator will glow and relay on power board will click. At end of brew cycle, three beeps sound and BREW indicator goes out.

Silicone hose from inlet valve may be removed from tank fitting and directed to an empty decanter to verify volume. All flow from hose must stop at end of brew cycle.

IF brew time of 120 seconds is too long, move volume control jumper to cover both pins. This will reduce timing range to 60 - 180 seconds.

IF brew time cannot be adjusted, or timing is outside of useable range, replace control board p/n 83635.

IF brew time is acceptable, but flow continues or hose continues to drip, replace inlet solenoid p/n 85752.

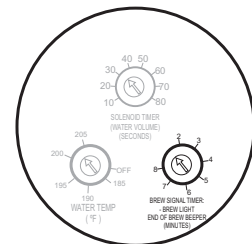


PROBLEM 3 - BREW LIGHT REMAINS LIT FOR TOO LONG PAST END OF BREW

Remove 2" silver hole plug from brewer body. Brew signal time (dripout) is added to end of brew cycle. This is to allow time for water remaining in brew chamber to drip out as coffee before a new brew is initiated. Be sure pointer on dial is set to desired time in minutes.

NOTE: Time cannot be adjusted during a brew cycle.

IF dripout timer cannot be set, replace controller p/n 83635.



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WATER TEMPERATURE

PROBLEM 1 - WATER TEMPERATURE WILL NOT CONTROL TEMPERATURE TOO LOW OR NO HEAT

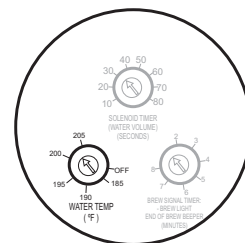
IMPORTANT

Energizing the brewer without water in the tank will usually cause the hi-limit to trip, and can permanently damage the heating elements.

Remove 2" silver hole plug from brewer body.

Water temperature setpoint is controlled by lower left dial on control board. Be sure pointer on dial is set to desired temperature.

NOTE: Temperature cannot be adjusted during a brew cycle.
Turn dial fully counterclockwise to disable tank heater.



- IF** temperature is consistently high or low, remove temperature probe from tank. Clean calcium and lime build-up. If probe cannot be cleaned, replace probe p/n 83644. Be sure to replace seal washer p/n 83731 at the same time.

Observe HEAT indicator, and listen for a “click” from power relay while turning water temp. dial clockwise.

- IF** neither HEAT indicator glows nor power relay clicks as the dial is advanced from minimum to maximum, replace control board p/n 83635.



CAUTION

The following procedure exposes live electric circuits.
Use due care when working around electricity.

Remove top panel to check voltage at heating element terminals. When HEAT indicator is lit, full line voltage must be present across heating element terminals.

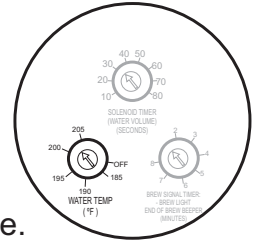
- IF** voltage is present at element terminals and unit is not heating, replace heating element p/n 8716-1. Also, be sure to replace gaskets p/n 8043-30.
- IF** voltage is NOT present, remove front panel. Be sure hi-limit thermostat is not tripped. Press red button until it clicks and stays latched in the “set” position. If hi-limit has tripped, find and rectify cause of over-temperature condition.
- IF** voltage is NOT present, examine wiring and connectors. Be sure multi-wire cable between control and power board is in good condition and properly connected to both boards. If wiring is OK, replace power board p/n 83636.
- IF** unit heats and controls, but HEAT indicator never lights, examine ribbon cable connector at control board. If this is OK, membrane keypad p/n 83633 may need to be replaced (non-critical item).

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WATER TEMPERATURE (continued)

PROBLEM 2 - WATER TEMPERATURE WILL NOT CONTROL TEMPERATURE TOO HIGH OR RUNAWAY

Remove 2" silver hole plug from brewer body.
Water temperature setpoint is controlled by lower left dial
on control board. Be sure pointer on dial is set to desired
temperature.



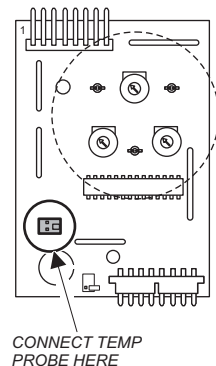
NOTE: Temperature cannot be adjusted during a brew cycle.
Turn dial fully counterclockwise to disable tank heater.

Check that temperature probe is properly connected to control board.

An open or disconnected probe will not control.
Temperature will runaway until the high-limit safety trips.

IMPORTANT

A shorted probe will cause a GENERAL FAULT condition
where all functions are disabled and all indicators flash.
Press and hold CANCEL key for 6 seconds to reset after
a general fault condition.
Brewer may also be reset by disconnecting from
electrical power, then reconnecting.



Measure resistance of temperature probe with an ohmmeter:
Probe should read approximately 31.5k Ω at room temperature (70°F)
and 2.5k Ω at brew temperature of 200°F. Any reading less than 1k Ω
indicates a defective temperature probe.

IF temperature probe fails resistance check, replace probe p/n 83644.
Be sure to replace seal washer p/n 83731 at the same time.

IF temperature probe passes resistance check, and is properly connected,
replace control board p/n 83635.

For a runaway condition:
Be sure unit has sufficient water supply. Check probe as above.

IF HEAT indicator is on, regardless of position of water temp dial on control board,
replace control board p/n 83635.

IF unit continues to heat, even when HEAT indicator is not lit, replace
power board p/n 83636.

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WARMER PLATES

PROBLEM 1 - MAIN WARMER DOES NOT HEAT

Main warmer plate will energize automatically at start of a brew. Plate may also be energized by pressing LOWER WARMER key. LED above LOWER key will glow when warmer plate is energized.



CAUTION

The following procedure exposes live electric circuits.
Use due care when working around electricity.

Remove front panel. Check for voltage between power board terminal WPLATE1 and terminal block L2 (white wire).

- IF** voltage is present, check warmer plate fuse. Fuse is located in lower right corner of power board bracket. Remove fuse and check for continuity. If fuse is bad (no continuity/infinite ohms), examine warmer wiring and element for obvious damage. Locate and repair cause of short before replacing fuse p/n 83164.
- IF** voltage is present and fuse is OK (continuity/zero ohms), replace warmer element p/n 8572-18.
- IF** voltage is NOT present and warmer light is lit, be sure wiring and connectors are in good condition, then replace power board p/n 83656.